Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-37. (Cancelled)

38. (previously presented) A method for self-servo writing in a disk drive, wherein the disk drive includes a transducer and a disk, the transducer reads data from and writes data to the disk, the disk includes tracks, the tracks include servo sectors, embedded runout correction (ERC) values compensate for repeatable runout (RRO) in the tracks, and a position error signal (PES) positions the transducer relative to the tracks, the method comprising:

providing a reference pattern on the disk; then

generating a PES using the transducer to read the reference pattern during a revolution of the disk; then

self-writing a servo burst on the disk using the transducer during the revolution of the disk, wherein the PES indicates RRO for the servo burst;

calculating an ERC value for the servo burst using the PES; and

storing the ERC value on the disk.

39. (previously presented) The method of claim 38, wherein the reference pattern is a temporary pattern.

40. (previously presented) The method of claim 38, wherein the reference pattern is circumferentially spaced spirals.

41. (previously presented) The method of claim 38, including self-writing the servo burst using the PES to position the transducer.

42. (previously presented) The method of claim 38, including:

generating a second PES using the transducer to read the reference pattern during a second revolution of the disk; then

self-writing a second servo burst on the disk using the transducer during the second revolution of the disk, wherein the servo bursts are radially offset, circumferentially staggered servo bursts, and the second PES indicates RRO for the second servo burst; and

calculating the ERC value for the servo bursts using the PES's.

43. (previously presented) The method of claim 42, wherein the servo bursts define a track centerline in a servo sector.

44. (previously presented) The method of claim 38, including:

generating a second PES using the transducer to read the reference pattern during the revolution of the disk after self-writing the servo burst, wherein the second PES indicates RRO for the servo burst;

generating an interpolated PES using the PES's; and

calculating the ERC value using the interpolated PES.

45. (previously presented) The method of claim 38, including performing the method on a sector-by-sector basis for each servo sector in a track.

46. (previously presented) The method of claim 38, including calculating the ERC value without reading the servo burst.

47. (previously presented) The method of claim 38, including calculating the ERC value without reading a final servo pattern.

48. (previously presented) A method for self-servo writing in a disk drive, wherein the disk drive includes a transducer and a disk, the transducer reads data from and writes data to the disk, the disk includes tracks, the tracks include servo sectors, embedded runout correction (ERC) values compensate for repeatable runout (RRO) in the tracks, and a position error signal (PES) positions the transducer relative to the tracks, the method comprising:

providing a reference pattern on the disk; then

generating a PES using the transducer to read the reference pattern while the transducer is at a radial position during a revolution of the disk; then

self-writing the servo burst on the disk using the transducer while the transducer is at the radial position during the revolution of the disk, wherein the PES indicates RRO for the servo burst;

calculating an ERC value for the servo burst using the PES; and

storing the ERC value on the disk.

49. (previously presented) The method of claim 48, wherein the reference pattern is a temporary pattern.

50. (previously presented) The method of claim 48, wherein the reference pattern is circumferentially spaced spirals.

51. (previously presented) The method of claim 48, including:

generating a second PES using the transducer to read the reference pattern while the transducer is at a second radial position during a second revolution of the disk; then

self-writing a second servo burst on the disk using the transducer while the transducer is at the second radial position during the second revolution of the disk, wherein the servo bursts are radially offset, circumferentially staggered servo bursts, and the second PES indicates RRO for the second servo burst;

calculating the ERC value for the servo bursts using the PES's; and then

storing the ERC value during a third revolution of the disk.

52. (previously presented) The method of claim 51, wherein the servo bursts define a track centerline in a servo sector.

53. (previously presented) The method of claim 51, wherein the second and third revolutions are consecutive revolutions.

54. (previously presented) The method of claim 48, including:

generating a second PES using the transducer to read the reference pattern while the transducer is at the radial position during the revolution of the disk after self-writing the servo burst, wherein the second PES indicates RRO for the servo burst;

generating an interpolated PES using the PES's; and

calculating the ERC value using the interpolated PES.

55. (previously presented) The method of claim 48, including performing the method on a sector-by-sector basis for each servo sector in a track.

56. (previously presented) The method of claim 48, including calculating the ERC value without reading the servo burst.

57. (previously presented) The method of claim 48, including calculating the ERC value without reading a final servo pattern.

58. (previously presented) A method for self-servo writing in a disk drive, wherein the disk drive includes a transducer and a disk, the transducer reads data from and writes data to the disk, the disk includes tracks, the tracks include servo sectors, embedded runout correction (ERC) values compensate for repeatable runout (RRO) in

the tracks, and a position error signal (PES) positions the transducer relative to the tracks, the method comprising:

providing a reference pattern on the disk; then

self-writing A and B servo bursts on the disk using the transducer, wherein the servo bursts are radially offset, circumferentially staggered servo bursts that form an A, B servo burst pair;

generating a PES using the transducer to read the reference pattern after self-writing the A servo burst and before self-writing the B servo burst, wherein the PES indicates RRO for the B servo burst;

calculating an ERC value for the B servo burst using the PES; and

storing the ERC value on the disk.

59. (previously presented) The method of claim 58, wherein the reference pattern is a temporary pattern.

60. (previously presented) The method of claim 58, wherein the reference pattern is circumferentially spaced spirals.

61. (previously presented) The method of claim 58, including self-writing the B servo burst using the PES to position the transducer.

62. (previously presented) The method of claim 58, including:

self-writing the A servo burst during a first revolution of the disk; then

generating the PES during a second revolution of the disk; and then

self-writing the B servo burst during the second revolution of the disk.

63. (previously presented) The method of claim 58, including:

self-writing C and D servo bursts on the disk using the transducer, wherein the C and D servo bursts are radially offset, circumferentially staggered servo bursts that form a C, D servo burst pair;

generating a second PES using the transducer to read the reference pattern after self-writing the C servo burst and before self-writing the D servo burst, wherein the second PES indicates RRO for the D servo burst; and

calculating the ERC value for the B and D servo bursts using the PES's.

64. (previously presented) The method of claim 58, including:

generating a second PES using the transducer to read the reference pattern after self-writing the B servo burst, wherein the second PES indicates RRO for the B servo burst;

generating an interpolated PES using the PES's; and

calculating the ERC value using the interpolated PES.

65. (previously presented) The method of claim 58, including performing the method on a sector-by-sector basis for each servo sector in a track.

66. (previously presented) The method of claim 58, including calculating the ERC value without reading the servo bursts.

67. (previously presented) The method of claim 58, including calculating the ERC value without reading a final servo pattern.

68. (previously presented) A method for self-servo writing in a disk drive, wherein the disk drive includes a transducer and a disk, the transducer reads data from and writes data to the disk, the disk includes tracks, the tracks include servo sectors, embedded runout correction (ERC) values compensate for repeatable runout (RRO) in the tracks, and a position error signal (PES) positions the transducer relative to the tracks, the method comprising:

providing a reference pattern on the disk; then

self-writing a first servo burst on the disk using the transducer while the transducer is at a first radial position; then

generating a PES using the transducer to read the reference pattern while the transducer is at a second radial position; then

self-writing a second servo burst on the disk using the transducer while the transducer is at the second radial position, wherein the servo bursts are radially offset, circumferentially staggered servo bursts that form a servo burst pair, and the PES indicates RRO for the second servo burst;

calculating an ERC value for the second servo burst using the PES; and

storing the ERC value on the disk.

69. (previously presented) The method of claim 68, wherein the reference pattern is a temporary pattern.

70. (previously presented) The method of claim 68, wherein the reference pattern is circumferentially spaced spirals.

71. (previously presented) The method of claim 68, wherein the servo bursts define a track centerline in a servo sector.

72. (previously presented) The method of claim 68, including:

self-writing the first servo burst during a first revolution of the disk; then

generating the PES during a second revolution of the disk; and then

self-writing the second servo burst during the second revolution of the disk.

73. (previously presented) The method of claim 68, including:

self-writing a third servo burst on the disk using the transducer while the transducer is at a third radial position; then

generating a second PES using the transducer to read the reference pattern while the transducer is at a fourth radial position; then

self-writing a fourth servo burst on the disk using the transducer while the transducer is at the fourth radial position, wherein the third and fourth servo bursts are radially offset, circumferentially staggered servo bursts that form a second servo burst pair, and the second PES indicates RRO for the fourth servo burst; and

calculating the ERC value for the second and fourth servo bursts using the PES's.

74. (previously presented) The method of claim 73, including:

self-writing the first servo burst during a first revolution of the disk;

generating the PES during a second revolution of the disk;

self-writing the second servo burst during the second revolution of the disk;

self-writing the third servo burst during a third revolution of the disk;

generating the second PES during a fourth revolution of the disk; and

self-writing the fourth servo burst during the fourth revolution of the disk.

75. (previously presented) The method of claim 68, including performing the method on a sector-by-sector basis for each servo sector in a track.

76. (previously presented) The method of claim 68, including calculating the ERC value without reading the servo bursts.

77. (previously presented) The method of claim 68, including calculating the ERC value without reading a final servo pattern.

78. (previously presented) A method for self-servo writing in a disk drive, wherein the disk drive includes a transducer and a disk, the transducer reads data from and writes data to the disk, the disk includes tracks, the tracks include servo sectors, embedded runout correction (ERC) values compensate for repeatable runout (RRO) in

the tracks, and a position error signal (PES) positions the transducer relative to the tracks, the method comprising:

providing a reference pattern on the disk; then

self-writing a first servo burst on the disk using the transducer while the transducer is at a first radial position during a first revolution of the disk; then

generating a PES using the transducer to read the reference pattern while the transducer is at a second radial position during a second revolution of the disk; then

self-writing a second servo burst on the disk using the transducer while the transducer is at the second radial position during the second revolution of the disk, thereby trimming the first servo burst and creating a burst seam between the servo bursts that is radially aligned with circumferential edges of the servo bursts, wherein the PES indicates RRO for the burst seam;

calculating an ERC value for the burst seam using the PES; and

storing the ERC value on the disk.

79. (previously presented) The method of claim 78, wherein the reference pattern is a temporary pattern.

80. (previously presented) The method of claim 78, wherein the reference pattern is circumferentially spaced spirals.

81. (previously presented) The method of claim 78, wherein the burst seam defines a track centerline in a servo sector.

82. (previously presented) The method of claim 78, including:

self-writing a third servo burst on the disk using the transducer while the transducer is at a third radial position during a third revolution of the disk; then

generating a second PES using the transducer to read the reference pattern while the transducer is at a fourth radial position during a fourth revolution of the disk; then

self-writing a fourth servo burst on the disk using the transducer while the transducer is at the fourth radial position during the fourth revolution of the disk, thereby trimming the third servo burst and creating a second burst seam between the third and fourth servo bursts that is radially aligned with circumferential edges of the third and fourth servo bursts, wherein the second PES indicates RRO for the second burst seam; and

calculating the ERC value for the burst seams using the PES's.

83. (previously presented) The method of claim 82, wherein the first, third, second and fourth revolutions are consecutive revolutions.

84. (previously presented) The method of claim 78, including:

generating a second PES using the transducer to read the reference pattern while the transducer is at the second radial position during the second revolution of the disk after self-writing the second servo burst, wherein the second PES indicates RRO for the burst seam;

generating an interpolated PES using the PES's; and

calculating the ERC value using the interpolated PES.

85. (previously presented) The method of claim 78, including performing the method on a sector-by-sector basis for each servo sector in a track.

86. (previously presented) The method of claim 78, including calculating the ERC value without reading the servo bursts.

87. (previously presented) The method of claim 78, including calculating the ERC value without reading a final servo pattern.

88. (previously presented) A method for self-servo writing in a disk drive, wherein the disk drive includes a transducer and a disk, the transducer reads data from and writes data to the disk, the disk includes tracks, the tracks include servo sectors, embedded runout correction (ERC) values compensate for repeatable runout (RRO) in the tracks, and a position error signal (PES) positions the transducer relative to the tracks, the method comprising:

providing a temporary reference pattern on the disk, wherein the reference pattern includes first and second circumferentially spaced spirals; then

generating a PES using the transducer to read the first spiral while the transducer is at a radial position during a revolution of the disk; then

self-writing a final servo burst on the disk using the transducer while the transducer is at the radial position during the revolution of the disk, wherein the PES indicates RRO for the servo burst;

calculating an ERC value for the servo burst using the PES; and

storing the ERC value on the disk.

89. (previously presented) The method of claim 88, wherein the spirals extend from an inner diameter of the disk to an outer diameter of the disk.

90. (previously presented) The method of claim 88, including reducing RRO in the spirals before self-writing the servo burst.

91. (previously presented) The method of claim 88, including self-writing the servo burst using the PES to position the transducer.

92. (previously presented) The method of claim 88, including:

generating a second PES using the transducer to read the first spiral while the transducer is at a second radial position during a second revolution of the disk; then

self-writing a final second servo burst on the disk using the transducer while the transducer is at the second radial position during the second revolution of the disk, wherein the servo bursts are radially offset, circumferentially staggered servo bursts, and the second PES indicates RRO for the second servo burst; and

calculating the ERC value for the servo bursts using the PES's.

93. (previously presented) The method of claim 92, wherein the servo bursts define a track centerline in a servo sector.

94. (previously presented) The method of claim 88, including:

generating a second PES using the transducer to read the second spiral while the transducer is at the radial position during the revolution of the disk after self-writing the servo burst, wherein the second PES indicates RRO for the servo burst;

generating an interpolated PES using the PES's; and

calculating the ERC value using the interpolated PES.

95. (previously presented) The method of claim 88, including performing the method on a sector-by-sector basis for each servo sector in a track.

96. (previously presented) The method of claim 88, including calculating the ERC value without reading the servo burst.

97. (previously presented) The method of claim 88, including calculating the ERC value without reading a final servo pattern.

98. (previously presented) A method for self-servo writing in a disk drive, wherein the disk drive includes a transducer and a disk, the transducer reads data from and writes data to the disk, the disk includes tracks, the tracks include servo sectors, embedded runout correction (ERC) values compensate for repeatable runout (RRO) in the tracks, and a position error signal (PES) positions the transducer relative to the tracks, the method comprising:

providing a temporary reference pattern on the disk, wherein the reference pattern includes first and second circumferentially spaced spirals; then

self-writing a final first servo burst on the disk using the transducer while the transducer is at a first radial position; then

generating a PES using the transducer to read the first spiral while the transducer is at a second radial position; then

self-writing a final second servo burst on the disk using the transducer while the transducer is at the second radial position, wherein the servo bursts are radially offset, circumferentially staggered servo bursts that form a servo burst pair, and the PES indicates RRO for the second servo burst;

calculating an ERC value for the second servo burst using the PES; and

storing the ERC value on the disk.

99. (previously presented) The method of claim 98, including reducing RRO in the spirals before self-writing the first servo burst.

100. (previously presented) The method of claim 98, including:

self-writing the first servo burst during a first revolution of the disk; then

generating the PES during a second revolution of the disk; and then

self-writing the second servo burst during the second revolution of the disk.

101. (previously presented) The method of claim 98, including:

self-writing a third servo burst on the disk using the transducer while the transducer is at a third radial position; then

generating a second PES using the transducer to read the first spiral while the transducer is at a fourth radial position; then

self-writing a fourth servo burst on the disk using the transducer while the transducer is at the fourth radial position, wherein the third and fourth servo bursts are radially offset, circumferentially staggered servo bursts that form a second servo burst pair, and the second PES indicates RRO for the fourth servo burst; and

calculating the ERC value for the second and fourth servo bursts using the PES's.

102. (previously presented) The method of claim 101, including:

self-writing the first servo burst during a first revolution of the disk;

generating the PES during a second revolution of the disk;

self-writing the second servo burst during the second revolution of the disk;

self-writing the third servo burst during a third revolution of the disk;

generating the second PES during a fourth revolution of the disk; and

self-writing the fourth servo burst during the fourth revolution of the disk.

103. (previously presented) The method of claim 102, wherein the first, third, second and fourth revolutions are consecutive revolutions.

104. (previously presented) The method of claim 98, including:

generating a second PES using the transducer to read the second spiral while the transducer is at the second radial position after self-writing the second servo burst, wherein the second PES indicates RRO for the second servo burst;

generating an interpolated PES using the PES's; and

calculating the ERC value using the interpolated PES.

105. (previously presented) The method of claim 98, including performing the method on a sector-by-sector basis for each servo sector in a track.

106. (previously presented) The method of claim 98, including calculating the ERC value without reading the servo bursts.

107. (previously presented) The method of claim 98, including calculating the ERC value without reading a final servo pattern.

108. (previously presented) A method for self-servo writing in a disk drive, wherein the disk drive includes a transducer and a disk, the transducer reads data from and writes data to the disk, the disk includes tracks, the tracks include servo sectors, embedded runout correction (ERC) values compensate for repeatable runout (RRO) in the tracks, and a position error signal (PES) positions the transducer relative to the tracks, the method comprising:

providing a temporary reference pattern on the disk, wherein the reference pattern includes first and second circumferentially spaced spirals; then

generating a PES using the transducer to read the first spiral while the transducer is at a radial position during a revolution of the disk; then

self-writing a final servo burst in a servo sector in a track using the transducer while the transducer is at the radial position during the revolution of the disk, wherein the PES indicates RRO for the servo burst;

calculating an ERC value for the servo sector using the PES;

storing the ERC value in the servo sector; and then

self-writing servo information in other tracks on the disk.

109. (previously presented) The method of claim 108, wherein the spirals extend from an inner diameter of the disk to an outer diameter of the disk.

110. (previously presented) The method of claim 108, including reducing RRO in the spirals before self-writing the servo burst.

111. (previously presented) The method of claim 108, including self-writing the servo burst using the PES to position the transducer.

112. (previously presented) The method of claim 108, including:

generating a second PES using the transducer to read the first spiral while the transducer is at a second radial position during a second revolution of the disk; then

self-writing a final second servo burst in the servo sector using the transducer while the transducer is at the second radial position during the second revolution of the disk, wherein the servo bursts are radially offset, circumferentially staggered servo bursts that form a servo burst pair, and the second PES indicates RRO for the second servo burst; and

calculating the ERC value using the PES's.

113. (previously presented) The method of claim 112, including self-writing the second servo burst using the second PES to position the transducer.

114. (previously presented) The method of claim 108, including:

generating a second PES using the transducer to read the second spiral while the transducer is at the radial position during the revolution of the disk after self-writing the servo burst, wherein the second PES indicates RRO for the servo burst;

generating an interpolated PES using the PES's; and

calculating the ERC value using the interpolated PES.

115. (previously presented) The method of claim 108, including performing the method on a sector-by-sector basis for each servo sector in the track.

116. (previously presented) The method of claim 108, including calculating the ERC value without reading the servo burst.

117. (previously presented) The method of claim 108, including calculating the ERC value without reading a final servo pattern.

118. (previously presented) A method for self-servo writing in a disk drive, wherein the disk drive includes a transducer and a disk, the transducer reads data from and writes data to the disk, the disk includes tracks, the tracks include servo sectors, embedded runout correction (ERC) values compensate for repeatable runout (RRO) in the tracks, and a position error signal (PES) positions the transducer relative to the tracks, the method comprising:

providing a temporary reference pattern on the disk, wherein the reference pattern includes first and second circumferentially spaced spirals; then

self-writing a final first servo burst in a servo sector in a track using the transducer while the transducer is at a first radial position; then

generating a PES using the transducer to read the first spiral while the transducer is at a second radial position; then

self-writing a final second servo burst in the servo sector using the transducer while the transducer is at the second radial position, thereby trimming the first servo burst and creating a burst seam between the servo bursts that is radially aligned with circumferential edges of the servo bursts and located in the servo sector, wherein the PES indicates RRO for the burst seam;

calculating an ERC value for the servo sector using the PES;

storing the ERC value in the servo sector; and then

self-writing servo information in other tracks on the disk.

119. (previously presented) The method of claim 118, including reducing RRO in the spirals before self-writing the first servo burst.

120. (previously presented) The method of claim 118, including:

self-writing the first servo burst during a first revolution of the disk; then

generating the PES during a second revolution of the disk; and then

self-writing the second servo burst and creating the burst seam during the second revolution of the disk.

121. (previously presented) The method of claim 118, including:

self-writing a third servo burst in the servo sector using the transducer while the transducer is at a third radial position; then

generating a second PES using the transducer to read the first spiral while the transducer is at a fourth radial position; then

self-writing a fourth servo burst in the servo sector using the transducer while the transducer is at the fourth radial position, thereby trimming the third servo burst and creating a second burst seam between the third and fourth servo bursts that is radially aligned with circumferential edges of the third and fourth servo bursts and located in the servo sector, wherein the second PES indicates RRO for the second burst seam; and

calculating the ERC value using the PES's.

122. (previously presented) The method of claim 121, including:

self-writing the first servo burst during a first revolution of the disk;

generating the PES during a second revolution of the disk;

self-writing the second servo burst and creating the burst seam during the second revolution of the disk;

self-writing the third servo burst during a third revolution of the disk;

generating the second PES during a fourth revolution of the disk; and

self-writing the fourth servo burst and creating the second burst seam during the fourth revolution of the disk.

123. (previously presented) The method of claim 122, wherein the first, third, second and fourth revolutions are consecutive revolutions.

124. (previously presented) The method of claim 118, including:

generating a second PES using the transducer to read the second spiral while the transducer is at the second radial position after self-writing the second servo burst, wherein the second PES indicates RRO for the burst seam;

generating an interpolated PES using the PES's; and

calculating the ERC value using the interpolated PES.

125. (previously presented) The method of claim 118, including performing the method on a sector-by-sector basis for each servo sector in the track.

126. (previously presented) The method of claim 118, including calculating the ERC value without reading the servo bursts.

127. (previously presented) The method of claim 118, including calculating the ERC value without reading a final servo pattern.

128. (currently amended) A disk drive, comprising:

a disk that includes a reference pattern and tracks, wherein the reference pattern includes servo information and the tracks include servo sectors, and embedded runout correction (ERC) values compensate for repeatable runout (RRO) in the tracks;

a transducer that reads data from and writes data to the disk; and

a controller that (1) generates a position error signal (PES) using the transducer to read the reference pattern while the transducer is at a radial position, (2) self-writes a servo burst on the disk using the transducer while using the PES to position the transducer at the radial position, wherein the PES indicates RRO for the servo burst and the transducer remains positioned at the radial position between reading the reference pattern and self-writing the servo burst, (3) calculates an ERC value for the servo burst using the PES, and (4) writes the ERC value to the disk using the transducer.

129. (previously presented) The disk drive of claim 128, wherein the reference pattern is a temporary pattern.

130. (previously presented) The disk drive of claim 128, wherein the reference pattern is circumferentially spaced spirals.

131. (previously presented) The disk drive of claim 128, wherein the controller (1) generates a second PES using the transducer to read the reference pattern while the transducer is at a second radial position, (2) self-writes a second servo burst on the disk using the transducer while using the second PES to position the transducer at the second radial position, wherein the servo bursts are radially offset, circumferentially staggered servo bursts, and the second PES indicates RRO for the second servo burst, and (3) calculates the ERC value for the servo bursts using the PES's.

132. (previously presented) The disk drive of claim 131, wherein the controller (1) generates the PES and self-writes the servo burst during a first revolution of the disk, and (2) generates the second PES and self-writes the second servo burst during a second revolution of the disk.

133. (previously presented) The disk drive of claim 132, wherein the servo bursts define a track centerline in a servo sector.

134. (previously presented) The disk drive of claim 128, wherein the controller (1) generates a second PES using the transducer to read the reference pattern while the transducer is at the radial position after self-writing the servo burst, wherein the second PES indicates RRO for the servo burst, (2) generates an interpolated PES using the PES's, and (3) calculates the ERC value using the interpolated PES.

135. (previously presented) The disk drive of claim 128, wherein the controller calculates and stores the ERC values on a sector-by-sector basis for each servo sector in a track.

136. (previously presented) The disk drive of claim 128, wherein the controller calculates the ERC value without reading the servo burst.

137. (previously presented) The disk drive of claim 128, wherein the controller calculates the ERC value without reading a final servo pattern.